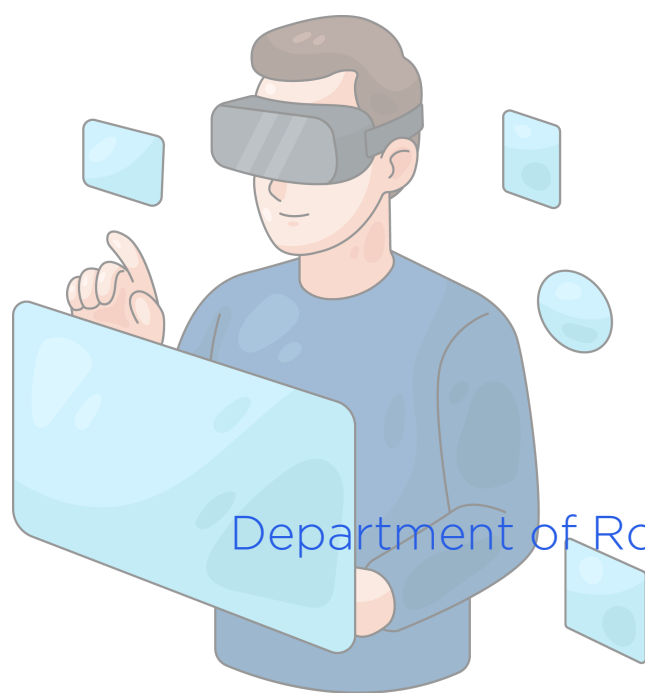


ME Spring Seminar 09

Research for Aerial Robots and Mechatronics for Future Demands: Aerial Mobility and Virtual Reality



Prof. Seong-Min Lee

Department of Robotics and Mechatronics Engineering
DGIST

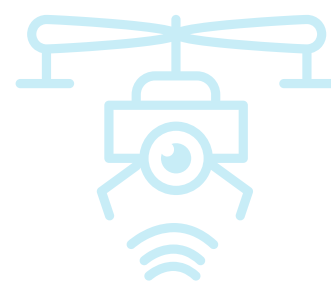


This seminar presents recent research efforts on advanced aerial robotic systems and intelligent mechatronics for future societal demands, particularly focusing on aerial mobility and immersive virtual reality applications. The main objective of this research is to develop robust and intelligent control frameworks capable of operating reliably under practical challenges such as time delays, disturbances, uncertain dynamics, and human interaction. First, the seminar introduces the development of a multi-degree-of-freedom spherical motion platform (SMP) driven by novel spherical wheel mechanisms for immersive motion simulation systems. To overcome limitations of conventional motion platforms, robust control and prediction-based preview control strategies are proposed to compensate for disturbances and severe time delays while mitigating simulator sickness in human-in-the-loop environments. The seminar also presents recent studies on aerial robotic systems including multirotor UAVs, unmanned helicopters, and thrust vector control mechanisms. Since aerial systems are highly sensitive to aerodynamic uncertainties, actuator dynamics, and communication delays, robust predictor-based control approaches are developed to improve stability, maneuverability, and fault tolerance under practical operating conditions. Finally, future research directions toward advanced intelligent mechatronics and autonomous aerial systems for future mobility and virtual reality applications are discussed.

Bldg.110 #N105

16:00 - 17:15

Wednesday, **May 20**



Host:
Prof. Hungsun Son (hson@unist.ac.kr)